Remarks

I. 35 U.S.C. §112

The Office Action rejects claims 1-12, 14-25, 27-32, 41, 46, 53 and 57 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claims 1, 24 and 53

Regarding claims 1, 24 and 53, the Office Action states:

> Claims 1, 24, 53 recites the limitation, "associating an operation code with said first packet, wherein said operation code indicates a status of said first packet, including whether said packet is to be transferred to the host computer system for processing in accordance with said pres-selected protocol". Claim 1 then recites, "transferring said first packet to the host computer system for processing in accordance with said preselected protocol." It is unclear what the purpose is of determining whether to transfer the packet to this host is for, when the next limitation always transfers the packet. It appears to defeat the entire purpose of the "determining step" when the following limitation always transfers the packet.

Claim 1 has been amended to recite, in part, "wherein said operation code indicates a status of said first packet, including whether said packet is a candidate for transfer to the host computer system that avoids processing in accordance with said pre-selected protocol." Applicants respectfully assert that this overcomes the issue identified by the Final Rejection. Claims 24 and 53 have been similarly amended.

B. Claim 24

Regarding claim 24, the Office Action states:

> Claim 24 as amended recites, "A method of transferring a packet to a host computer". The last limitation of claim 24 recites, "transferring said first packet to a host computer", which appears to include insufficient antecedent basis. It is unclear as to whether this refers to the same host computer recited in the preamble, or another host computer.

Claim 24 has been amended to recite, in part, "transferring said first packet to the host computer system."

C. Claims 24 and 25

Regarding claims 24 and 25, the Office Action states:

> Claim 25 recites, "The method of claim 24, further comprising: transferring said TCB from said host computer system to said communication device." However, it appears in claim 24 that the TCB is generated at the communication device.
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> Claim 24
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> The first limitation recites, "parsing a header portion of a first packet received at a communication device to determine if said first packet conforms to a pre-selected protocol". This limitation clearly recites the parsing being performed at the communication device.
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> The second limitation recites, "generating a TCP control block (TCB) to identify a first communication flow that includes said first packet". This limitation clearly requires the possession of the packet in order to generate the TCB to identify the flow that includes said first packet.
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> The third limitation recites, "associating a summary with said first packet, wherein said summary indicates a status of said first packet, including whether said packet is to be transferred to the host computer system for processing". This limitation clearly shows that the packet has not yet been transferred to the host computer system, but rather indicates whether the packet should or should not be transferred to the host computer system. Therefore, the second limitation, (i.e. generating a TCB that identifies a flow including said first packet) must be performed at the communication device since the generation step clearly requires the use of the first packet, and the packet has not even been transferred to the host device at this point.
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> However, claim 25 recites, "The method of claim 24, further comprising: transferring said TCB from said host computer system to said communication device." Therefore it is unclear how the TCB is transferred from the host computer system to the communication device if such is generated at the communication device.

Applicants respectfully note that while claim 24 recites, in part, "generating a TCP control block (TCB) to identify a first communication flow that includes said first packet," it does not recite that the TCP is generated by "the communication device." For example, the TCB could be generated by the "the communication device" or by "host computer system." In the latter case, the TCB could be transferred to "the communication device" or be accessible by "the communication device." Thus, applicants respectfully assert claim that 24 is not indefinite.

Applicants have amended claim 25 recite, in part, "wherein said generating a TCP control block (TCB) is performed by said host computer system, and further comprising: transferring said TCB from said host computer system to said communication device." Thus, applicants respectfully assert that claim 25 is not indefinite.

D. Claim 32

Regarding claim 32, the Office Action states:

> Claim 32 recites, "A method of transferring a packet received at a network interface to a host computer system". The amended limitation recites, "if the host computer system contains a plurality of processors such that a first of the processors is on the network interface". The preamble differentiates the network interface and the host computer system as two separate elements. Therefore it is unclear how one of the host computer system's processors can be on the network interface.

Claim 3 has been amended to recite, in part, "A method of transferring a packet received at a network interface of a host computer system." Thus, applicants respectfully assert that claim 32 is not indefinite.

II. 35 U.S.C. §103

Claims 1-12, 14-17, 20-31, 42-44, 46-53 and 55-56 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 6,172,980 to Flanders et al. ("Flanders").

A. Claims 1, 24 and 53

Regarding claims 1, 24 and 53, the Office Action states:

> Regarding claims 1, 24, 53, Flanders disclosed a method of transferring a packet to a computer system, wherein the packet is received at a communication device from a network (Flanders, col. 1, lines 39-41, a network router receiving and routing packets), comprising:
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> parsing a header portion of a first packet received at a communication device to determine if said first packet conforms to a pre-selected protocol (Flanders, col. 3, lines 60-65, "RHP (Receive Header Processor) determines the protocol being used for the received data unit"; See also col. 6, lines 50-51);
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> generating a flow key to identify a first communication flow that includes said first packet (Flanders, col. 6, line 50 through col. 7, line 5, port information extracted from the received frame in order to classify packet according to flow ID, the information extracted from the packet used as a flow key to look the packet up);

routing the packets to their destination (Flanders, col. 1, lines 50-55, Flanders disclosed the router making forwarding decisions to route the packet, see also Abstract, "identifying a data unit to be routed by a router)

associating an operation code with said first packet, wherein said operation code indicates a status of said first packet (Flanders, col. 6, line 65 through col. 7, line 15, in accordance with the received frame, a status word is set; see also, col. 4, lines 15-23).

Flanders further disclosed forwarding the packets for receipt by a downstream network device (Flanders, col. 9, lines 40-43).

Flanders did not explicitly state transferring said first packet to the disclosed device system for processing in accordance with said pre-selected protocol.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the router of Flanders clearly routes the packet to a network device, that the network device must perform the proper protocol processing on the packet in order to properly interpret the information from that packet. For example, using the very well known TCP/IP protocol, in order for two computers to successfully communicate via TCP/IP (Flanders, Fig. 6), both computers must protocol process the TCP/IP packets, which are clearly routed through the Internet, via routers such as the one described by Flanders.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to interpret the routing of a packet to its destination to include that destination performing the proper protocol processing in order to obtain the predictable result of the destination device being able to successfully interpret that packet at the receiving end, thereby resulting in successful communication.

Claim 24 includes a method with limitations that are substantially similar to the limitations of claim 1, and is therefore rejected under the same rationale. Claim 53 recites a computer readable storage medium storing instructions that perform the method of claim 1. Therefore claims 24, 53 are rejected under the same rationale.

Applicants have amended claim 1 to recite, in part, "parsing a header portion of a first packet received at a network interface for the host computer." Flanders, on the other hand, teaches "a network bridge/router for identifying received data units which may require routing, for identifying a protocol associated with the received data unit, for determining whether the received data unit is in fact to be bridged or routed, and for carrying out appropriate data unit transfer operations, all in hardware." Column 1, lines 39-44. In other words, Flanders teaches forwarding packets by its communication device rather than processing packets at a network interface for the host computer.

Moreover, claim 1 has also been amended to recite "wherein said operation code indicates a status of said first packet, including whether said packet is a candidate for transfer to the host computer system that avoids processing in accordance with said pre-selected protocol." The invention of Flanders is directed to hardware that determines whether packets are bridged or routed, and does not disclose this recitation.

Claims 24 and 53 have been amended in a manner similar to claim 1. For the foregoing reasons, applicants respectfully assert that claims 1, 24 and 53, and any claims that depend from claims 1, 24 and 53 are not obvious over Flanders.

B. Claims 42 and 44

Regarding claims 42 and 44, the Office Action states:

> Regarding claims 42 and 44, Claim 42 includes an apparatus with a memory and modules to perform the limitations that are substantially similar to claim 1 and claim 44 recites a computer system with limitations that are substantially to claims 1. Claims 42 and 44 further includes a "flow re-assembler configured to re-assemble a data portion of said first packet with a data portion of second packet in said communication flow and storing both packets in memory as well as a processor to process said packet. As shown in the rejection of claim 1, Flanders disclosed a router performing these limitations.
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> Flanders did not explicitly state flow re-assembler configured to re-assemble a data portion of said first packet with a data portion of second packet in said communication flow and storing both packets in memory of the downstream network device.
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> However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the router of Flanders clearly routes the packets belonging to a particular flow to a network device, that the network device must perform the proper protocol processing on the packets in order to properly interpret the information from that packet, thereby requiring storing of the packet data and combining the data to properly interpret the flow. For example, using the very well known TCP/IP protocol, in order for two computers to successfully communicate via TCP/IP (Flanders, Fig. 6), both computers must protocol process the TCP/IP packets, which are clearly routed through the Internet, via routers such as the one described by Flanders.
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> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to interpret the routing of a packets to their destination to include that destination actually storing the packet data in order to perform the proper protocol processing in order to obtain the predictable result of the destination device being able to successfully interpret/batch that data from the packets at the receiving end,

> thereby resulting in successful communication. For example, the routing of a file that requires multiple packets to be sent in order to transmit the entire file across the network, which requires the receiving end to properly protocol process the packets that make up the file and re-assemble the data portions in order for communication of the file to properly occur.

Claim 42 has been amended to recite, in part, "a traffic classifier, disposed in a network interface for the host computer system." Claim 42 has also been amended to recite that a packet memory, a packet batching module and a flow re-assembler are all "disposed in the network interface." As noted above, the "network bridge/router" of Flanders is directed to forwarding frames "for receipt by a downstream network device," rather than "a network interface for the host computer system." For at least this reason, applicants respectfully assert that claim 42 is not obvious over Flanders.

In addition, applicants have amended claim 42 to recite "said first packet data portion and said second packet data portion are stored in a host computer memory area that is controlled by a host computer application." Nothing in Flanders teaches or suggests this recitation. For at least this additional reason, applicants respectfully assert that claim 42 and any claims that depend from claim 42 are not obvious over Flanders.

Similarly, claim 44 has been amended to recite a "network interface for the computer system." As noted above, the "network bridge/router" of Flanders is directed to forwarding frames "for receipt by a downstream network device," rather than "a network interface for the computer system." For at least this reason, applicants respectfully assert that claim 44 is not obvious over Flanders.

Claim 44 was previously amended to recite in part "a re-assembler for storing data portions of said multiple packets without header portions in a first portion of said memory." The Final Rejection, however, does not discuss this recitation. Applicants respectfully reiterate that Flanders does not teach "a re-assembler for storing data portions of said multiple packets without header portions in a first portion of said memory." Moreover, applicants assert that it would not have been obvious to modify Flanders to create "a re-assembler for storing data portions of said multiple packets without header portions in a first portion of said memory." Because the frames of Flanders are forwarded, and because networks such as Ethernet networks typically have rules limiting frame sizes, "storing data portions of said multiple packets without header

portions" would likely cause the frames to be too large to forward, thwarting the primary purpose of Flanders, as well as delaying any forwarding that actually occurred, without any discernable benefit. For at least this reason, applicants respectfully assert that claim 44 is not obvious over Flanders.

C. Claim 47

Regarding claim 47, the Office Action states:

> Regarding claim 47, Flanders disclosed a device for receiving a packet from a network and transferring the packet to a host computer system, comprising:
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> a parser configured to parse a header portion of a packet received from a network, wherein said parsing comprises: determining whether a header within said header portion conforms to one of a set of communication protocols (Flanders, col. 3, lines 60-65, "RHP (Receive Header Processor) determines the protocol being used for the received data unit"; See also col. 6, lines 50-51); and
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> if said header conforms to one of said communication protocols, extracting information from said header portion to identify a communication flow to which said packet belongs (Flanders, col. 6, line 50 through col. 7, line 5, port information extracted from the received frame in order to classify packet according to flow ID, the information extracted from the packet used as a flow key to look the packet up); a flow memory configured to store a flow identifier for identifying said communication flow; a flow manager configured to assign an operation code to said packet, wherein said operation code: indicates a status of said packet; and indicates a manner of transferring said packet to the host computer system; a packet memory configured to store said packet (Flanders, col. 6, line 65 through col. 7, line 15, in accordance with the received frame, a status word is set; see also, col. 4, lines 15-23. Flanders further disclosed forwarding the packets for receipt by a downstream network device (Flanders, col. 9, lines 40-43).
>
> Flanders did not explicitly state transferring said first packet to the disclosed device system for processing in accordance with said pre-selected protocol.
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> However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the router of Flanders clearly routes the packet to a network device, that the network device must perform the proper protocol processing on the packet in order to properly interpret the information from that packet. For example, using the very well known TCP/IP protocol, in order for two computers to successfully communicate via TCP/IP (Flanders, Fig. 6), both computers must protocol process the TCP/IP packets, which are clearly routed through the Internet, via routers such as the one described by Flanders.

> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to interpret the routing of a packet to its destination to include that destination performing the proper protocol processing in order to obtain the predictable result of the destination device being able to successfully interpret that packet at the receiving end, thereby resulting in successful communication.
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> Flanders also did not explicitly state wherein said device is coupled to the host computer system by a bus. However it well known to one of ordinary skill that a bus is a device that is used to connect various computers/devices in a network. Since the router and end node is connected by a network, it would have been obvious to one of ordinary skill in the art at the time the invention was made to couple these devices via a bus thereby making the system scalable towards already well known devices.

Claim 47 has been amended to recite in part "wherein said device is a peripheral device for the host computer system." Applicants respectfully assert that Flanders does not teach or suggest "wherein said device is a peripheral device for the host computer system." Instead, Flanders states in column 9, lines 41-43: "Outbound frames are forwarded from the TXSM FIFO 64 over the respective output port 20 of the network interface module 14 for receipt by a downstream network device." For at least this reason, applicants respectfully assert that claim 47 and all the claims that depend from claim 47 are not obvious over Flanders.

D. Claims 32, 45 and 54

Claims 32, 45 and 54 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Flanders in view of U.S. Patent No. 5,590,328 to Seno et al. ("Seno").

Regarding claim 32, the Office Action states:

> Regarding claim 32, Flanders disclosed a method of transferring a packet received at a network interface to a host computer system, comprising:
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> receiving a packet from a network, storing said packet in a packet memory and parsing a header portion of said packet; extracting a value stored in said header portion; identifying a communication flow comprising said packet (Flanders, col. 3, lines 60-65, "RHP (Receive Header Processor) determines the protocol being used for the received data unit"; See also col. 6, lines 50-51; col. 6, line 50 through col. 7, line 5, port information extracted from the received frame in order to classify packet according to flow ID, the information extracted from the packet used as a flow key to look the packet up);

determining whether a header in said header portion conforms to a pre-selected protocol (Flanders, col. 3, lines 60-65, "RHP (Receive Header Processor) determines the protocol being used for the received data unit");

determining whether a second packet in said packet memory is part of said communication flow (Flanders, col. 1, lines 39-40, Flanders disclosed performing the same for multiple received data units); and

if the host computer system contains a plurality of processors such that a first processor of the processors is on the network interface and a second of the processors is on the host computer, identifying a processor of the first and second processors to process said packet (Flanders, col. 4, lines 22-35, 50-63 Flanders disclosed the RHP determining whether the packet is to be routed or bridged and performing protocol processing on the packet when it is to be routed based on bytes, therefore determining whether the interface processes the packet or if it is sent to the end device for processing). Flanders further disclosed forwarding the packets for receipt by a downstream network device (Flanders, col. 9, lines 40-43)

Flanders further disclosed forwarding the packets for receipt by a downstream network device (Flanders, col. 9, lines 40-43)

Flanders did not explicitly state the step of storing said packet in a host memory area in the downstream network device.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the router of Flanders clearly routes the packet to a network device, that the network device must perform the proper protocol processing on the packet in order to properly interpret the information from that packet, thereby requiring storing of the packet. For example, using the very well known TCP/IP protocol, in order for two computers to successfully communicate via TCP/IP (Flanders, Fig. 6), both computers must protocol process the TCP/IP packets, which are clearly routed through the Internet, via routers such as the one described by Flanders.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to interpret the routing of a packet to its destination to include that destination actually storing the packet in order to perform the proper protocol processing in order to obtain the predictable result of the destination device being able to successfully interpret that packet at the receiving end, thereby resulting in successful communication.

Claim 32 has been amended to recite, in part, "receiving, by the network interface, a packet from a network; storing, by the network interface, said packet in a packet memory; parsing, by the network interface, a header portion of said packet; extracting, by the network interface, a value stored in said header portion; identifying, by the network interface, a communication flow comprising said packet; determining, by the network interface, whether a header in said header portion conforms to a pre-selected

protocol; determining, by the network interface, whether a second packet in said packet memory is part of said communication flow; and storing, by the network interface, said packet in a host memory area.." Applicants respectfully assert that neither Seno nor Flanders teaches or suggests these recitations, and that claim 32 is nonobvious over Flanders in view of Seno.

Claims 45 and 54 depend from independent claims 42 and 47, respectively, and are nonobvious for the reasons discussed with regard to those independent claims.

III. Allowable Subject Matter

The Final Rejection states that claims 13, 33-40 and 58-62 are allowed, and that claims 19, 41, 57 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants appreciate the Examiners indication of patentable subject matter. As discussed above, however, applicants respectfully assert that all of the pending claims are patentable, in light of the amendments to the claims.

IV. Conclusion

Applicants appreciate the time spent by the Examiner for his thorough examination of this large set of claims as well as his review of this reply. Applicants believe that the claims are now allowable and solicit a Notice of Allowance. Should the Examiner have any questions about this reply or application he is respectfully requested to telephone the undersigned.

Respectfully submitted,

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